



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/057,027	01/24/2002	Friedrich Jonas	Mo6935/LeA 34,765	3582
34947	7590	12/29/2004	EXAMINER	
LANXESS CORPORATION PATENT DEPARTMENT/ BLDG 14 100 BAYER ROAD PITTSBURGH, PA 15205-9741			METZMAIER, DANIEL S	
			ART UNIT	PAPER NUMBER
			1712	

DATE MAILED: 12/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/057,027

Applicant(s)

JONAS ET AL.

Examiner

Daniel S. Metzmaier

Art Unit

1712

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 9/9/2004 & 10/12/2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,2,4,5 and 9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,5 and 9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

Claims 1-2, 4-5 and 9 are pending.

#### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on September 9, 2004 has been entered.

#### ***Specification***

2. The examples refer to example 2 from EP-A 991 303. Said reference example is in other than English and any comparative results in the example have been given no patentable weight. Likewise, no weight is given to reference on page 6, lines 20-21 to the level of impurities.

#### ***Claim Rejections - 35 USC § 112***

The following rejection is made in the alternative to the rejections base on the prior are rejections, which follow.

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1-2, 4-5 and 9 are rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure, which does not have an adequate written description. The

Art Unit: 1712

making of the poly(3,4-ethylenedioxythiophene is deemed critical or essential to the practice of the invention, but not included in the specification or the claim(s) is not adequately described by the disclosure.

Applicants (page 4 of the response filed September 9, 2004) state that one having ordinary skill in the art would **not** know how to make the claimed dispersions and further state that the examiner has not provided a *prima facie* case of obviousness regarding the making of the poly(3,4-ethylenedioxythiophene. Applicants improperly reference non-English language foreign references describing how said materials are made. Said references are **not** incorporated by reference.

The skilled artisan, having the originally filed specification would **not** have known how to make applicants invention as filed.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-2, 4-5 and 9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter, which applicant regards as the invention.

The dispersion property based on the resistivity of the coatings is indefinite. The resistivity is a measured value of a product derived from the claimed dispersions but no method is set forth for how said dispersion was coated or said resistivity was measured. Both the coating and the measurement may significantly effect the resistivity, such as the thickness of the coating or the impurities among other parameters. See Jonas et al,

Art Unit: 1712

US 5,766,515, column 2, line 66, to column 3, line 4, regarding the **dependence of the resistivity on the thickness** of the coating.

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The following rejections are made in the alternative to the rejection above under 35 USC 112, first paragraph.

10. Claims 1-2, 4-5 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Louwet et al, US 6,632,472, as applied to claims 1-2, 4-5 and 9 above, and further in view of Bayer AG, DE 198 41 803 A1, as evidenced by Jonas et al, US 6,391,481.

Jonas et al (item 30 on the U.S. Patent face) cited DE 198 41 803 as the foreign priority document. DE 198 41 803 has a publication date of March 2000, more than 12 months prior to the instant filing date. Jonas et al is used as an English language equivalent of the DE 198 41 803 reference and said references are considered to contain the same disclosures or substantially the same disclosures. Jonas et al is referred to for citations.

Louwet et al (examples) discloses aqueous dispersions of poly(3,4-ethylenedioxythiophene) [PEDOT] and polystyrene sulphonate [PSS] having a mean particle size of 50 nm and Table 1 sets forth representative dispersions. Several of the examples having 90% by weight of the particles having sizes less than 58 nm. Applicant's claims set forth dispersions having "about 90 %" and a size of "less than 50 nm" or dispersions, "wherein at least 90% of the particles are less than about 40 nm" (emphasis added). Since applicants modify both the percentage and/or size of particles by "about", the disclosure in Louwet et al reads on the instant claims.

It is furthermore noted, the prior art characterizes the particle size by weight and the instant claims are 90% of the particles by particle number. Said comparison is not a direct comparison since the same number of larger particle implicitly represents a larger

Art Unit: 1712

weight. Assuming the density of the polymer is the same based on the same material, the same number of particles having a larger size would weigh more and have a higher large particle size percentage than the percentage of the number of said larger particles. One skilled in the art would expect the particle size for 90 number percentage based on the number of particles to have a lower particle size than the particle size based on the weight of the particles. This is clear since for two particles having sizes of 58 nm and 50 nm, the resulting particles have a mass ratio of greater than 1.5 times more mass, i.e., volume, for the 58 nm particle than for the 50 nm particle.

To the extent the Louwet et al differs from the claims in the particle size distribution, it would have been obvious to one of ordinary skilled in the art at the time of applicants' invention to vary the degree of homogenization and/or microfluidization clearly contemplated in the Louwet et al reference. Louwet et al (examples, particularly column 17, lines 1-16) discloses treatment of the dispersions with a homogenizer and a microfluidizer. It would have been obvious to one of ordinary skilled in the art at the time of applicants' invention to vary the degree of homogenization and/or microfluidization for the advantage of obtaining a more homogeneous and stable compositions and coating resulting therefrom.

Applicants have not shown the different particle characterization based on the particle number or by particle weight to be distinct. To the extent the particle size distribution differs, applicants have not shown said difference to be unexpected or unobvious over the prior art.

Furthermore, Bayer Ag and Jonas et al (column 2, lines 7 et seq) teaches the very fine particle size of the dispersions improve the lifetime of the devices employing said materials therein. Bayer Ag and Jonas et al (examples and column 2, lines 7 et seq) disclose 3,4-polyalkylenedioxythiophene/polystyrene sulfonate dispersions (PEDT/PSS, wt ratio = 1:2.5; 1:4; and 1:8). Bayer Ag and Jonas et al further teach that by varying the specific ratio of the conductive polycations (PEDT) to the nonconductive counter-ions or nonionic binders (PSS), the occurrence of short circuits or cross-talk can be significantly reduced.

It would have been obvious to one of ordinary skilled in the art at the time of applicants' invention to reduce the particle size of the dispersion for increased particle packing at the coating surface and increased dispersion homogeneity. It would have been obvious to one of ordinary skilled in the art at the time of applicants' invention to vary the ratio of the PEDT/PSS ratio for the advantage of varying the resistivity and conductivity of the layered formed therefrom.

The coating resistivity of the claims would have been an expected result of varying the PEDT/PSS ratio due to the decrease of the conductive polycations and increase of the nonconductive polyanions clearly contemplated in the reference.

11. Claims 1-2, 4-6 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bayer AG, DE 198 41 803 A1, as evidenced by Jonas et al, US 6,391,481; optionally in view of Krafft et al, US 5,370,981. Jonas et al (item 30 on the U.S. Patent face) cited DE 198 41 803 as the foreign priority document. DE 198 41 803 has a publication date of March 2000, more than 12 months prior to the instant filing date.



Art Unit: 1712

Jonas et al is used as an English language equivalent of the DE 198 41 803 reference and said references are considered to contain the same disclosures or substantially the same disclosures. Jonas et al is referred to for citations.

Bayer Ag and Jonas et al differ from the claims in the particle size and the resistivity.

Bayer Ag and Jonas et al (examples and column 2, lines 7 et seq) disclose 3,4-polyalkylenedioxythiophene/polystyrene sulfonate dispersions (PEDT/PSS, wt ratio = 1:2.5; 1:4; and 1:8). Bayer Ag and Jonas et al column 2, lines 7 et seq) teaches the very fine particle size of the dispersions improve the lifetime of the devices employing said materials therein. Bayer Ag and Jonas et al further teach that by varying the specific ratio of the conductive polycations (PEDT) to the nonconductive counterions or nonionic binders (PSS), the occurrence of short circuits or crosstalk can be significantly reduced.

It would have been obvious to one of ordinary skilled in the art at the time of applicants' invention to vary the particle size of the dispersion for increased particle packing at the coating surface and increased dispersion homogeneity. It would have been obvious to one of ordinary skilled in the art at the time of applicants' invention to vary the ratio of the PEDT/PSS ratio for the advantage of varying the resistivity and conductivity of the layered formed therefrom.

The coating resistivity of the claims would have been an expected result of varying the PEDT/PSS ratio due to the decrease of the conductive polycations and increase of the nonconductive polyanions clearly contemplated in the reference.

Art Unit: 1712

Furthermore, Krafft et al (examples) exemplifies PEDT/PSS dispersions and teaches (column 3, lines 11-18) teaches the particle sizes of the dispersions may range from 5 nm to 100 nm. These references are combinable because they teach PEDT/PSS dispersions. It would have been obvious to one of ordinary skilled in the art at the time of applicants' invention to vary the particle size of said dispersions within the conventional size ranges as shown Krafft et al reference for the advantage of stability and the expectation of a more homogeneous final product.

Applicants' evidence of record does not show any unexpected or nonobvious results in view of the prior art.

Regarding the coating properties of more than 5000  $\Omega\text{cm}$ , applicants have not provided a nexus between the claimed intermediate compositions and the properties of the final product as a coating. Since this is a property that depends on the method of coating and applicants have not made the proper nexus between the claimed dispersions and the coatings, which define said property; said property is given little of no patentable weight. The resistance of the coating would have been expected to be inherent to the compositions of the prior art since said resistance may be attained by varying the coating methods and/or parameters, such as thickness. Said methods are not and/or parameters are not set forth in the claims.

### ***Response to Arguments***

12. Applicant's arguments filed September 9, 2004 have been fully considered but they are not persuasive.

13. Applicants' (page 4 of the September 9, 2004 response) asserted support for the amendment to claim 1 should be claim 6 and page 4, lines 9-17, which discusses:

"Suitable comminution methods are, for example, grinding by means of ball mills or stirred mills, high-speed stirring, ultrasound treatment and high-pressure homogenization" and high-pressure homogenization is "preferably from about 100 to about 1000 bar."

14. Applicants' (pages 4 and 5) remarks regarding the specification have been addressed in the above rejection under 35 USC 112, first paragraph.

15. Applicants (page 5) assert the rejection under 35 USC 112, second paragraph should be withdrawn in view of the amendments. While the amendments further define how the compositions are made, the amendment defines the coating step defining the coating resistivity as "building". Since said resistance may be attained by varying the coating methods and/or parameters, such as thickness, said property has been given little or no patentable weight in defining the compositions.

16. Applicants (page 7) assert that applicants have "found that treating the specific dispersion according to claim 1 by high pressure homogenization leads to higher resistivity of the dried material".

This has not been deemed persuasive for the following reasons.

(i) The prior art discloses or at least suggest the particle size (at least broadly) as claimed (Table 1, Louwet et al), the use of high pressure homogenization (examples, Louwet et al), and variation of the PEDOT/PSS within the claimed range including 1:8 (examples and column 2, lines 7 et seq; Bayer Ag and Jonas et al).

Louwet et al further (example 1, Table 1) discloses compositions having the same or substantially the same particle size distribution prior to freeze thaw treatment. Said compositions are made employing vigorous stirring, which is included in applicants' suitable comminution methods (page 4, lines 9-11).

(ii) While the amendments further define how the compositions are made, the compositions are examined based on the composition rather than the method steps employed to make said compositions. Applicants (page 4, lines 9-11, of the instant specification) disclose "Suitable comminution methods are, for example, grinding by means of ball mills or stirred mills, high-speed stirring, ultrasound treatment" as well as high-pressure homogenization now claimed.

(iii) The resistance of a final product (coating) derived from the intermediate claimed (dispersion) has been given little or no patentable weight since the claim does not adequately define the method of making said coating and/or the method of measuring said coating. Evidence of record sets forth that at least the thickness of the coating affects the resistivity.

(iv) Applicants have not provided an adequate nexus between the properties and the intermediate compositions claimed.

(v) Since a *prima facie* case of obviousness has been presented, applicants have not proffered evidence or arguments to adequately rebut said *prima facie* case of obviousness.

Art Unit: 1712

17. Applicants' (page 7) assertion regarding example 3 of Louwet et al and a lack of change in the surface resistivity has not been deemed persuasive since Louwet et al starts with extremely fine particles as shown in Table 1 therein.

18. Applicants (page 8) assert it is improper to combine the teachings of Louwet et al freeze thaw teachings, which teaches homogenization does not alter said materials and the teachings of Bayer Ag and the Jonas et al reference. This has not been deemed persuasive for the following reasons. The very fact that Louwet et al teaches homogenization does not alter the materials, would suggest the use of said homogenization to provide a homogeneous dispersion rather than filtering as taught in Bayer Ag and the Jonas et al reference (examples).

19. To the extent the compositions of the Louwet et al reference are shown to be different than those claimed, attention is also directed to MPEP 2144.05, wherein " . . . a *prima facie* case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties. *Titanium Metals Corp. of America v. Banner*, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985) . . . ".

20. Applicants (pages 8 and 9) assert the Bayer Ag and Jonas et al references lack a teaching of the particle size and the resistivity of the coatings. The Bayer Ag and Jonas et al references broadly teach ranges that would encompass those claimed as an optimum range. The Bayer Ag and Jonas et al references further suggest the desire to comminute the dispersed particles since the Bayer Ag and Jonas et al references teach the use of very fine particles increase the life of electroluminescent displays. Krafft

Art Unit: 1712

teaches conventional particle sizes of the PEDT/PSS dispersions may range from 5 nm to 100 nm.


Applicants arguments regarding the resistivity has not been persuasive for the reasons set forth above regarding the Louwet et al reference and since the coating methods are not defined.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel S. Metzmaier whose telephone number is (571) 272-1089. The examiner can normally be reached on 9:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on (571) 272-1302302. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
**Daniel S. Metzmaier**  
**Primary Examiner**  
**Art Unit 1712**

DSM